

REMARKS

The aforesaid amendments are respectfully submitted in response to the official action dated August 21, 2009. The amendments to claim 5 are intended to exclude one unnecessary limitation with respect to the location of the motor, and to include most of the limitations from prior claim 13 into claim 5. New claim 19 is intended to substantially correspond to prior claim 5 with the limitations of prior claim 17 added thereto. New claim 21 is intended to correspond to prior claim 5, with limitations with respect to the specific details of the tube guide deleted from this new claim, but with many of the limitations of prior claim 13 now including therein, including requirement of the carousel in combination with that coiling system.

It is therefore respectfully submitted that no new matter is included in these amendments, and that any additional language included in the independent claims in this application is specifically supported not only in the specification and drawings, but in the prior claims contained in this application. Therefore, reconsideration and allowance of this application is respectfully solicited.

Claims 5, 10, and 12 have been rejected as being unpatentable over Heimberger in view of Heimberger 2, Blecher *et al.* and Dijkman, Sr. *et al.* under 35 U.S.C. § 103(a). Heimberger is said to disclose a coiling system for continuously forming coiled plastic, including a main tube shaft for forming plastic tubing into a helix (Fig. 5 of Heimberger). The mandrel 10 is said to be circular (col.1 l.71 to col.2 l.2), but is said to be considered to be a main tube shaft regardless of its shape. Heimberger is said to further teach drive means 17 which is said to conventionally be a motor, and is used for rotating the main tube shaft about its longitudinal axis. A tube guide at a first point on a tube shaft is said to

constitute element 14 in Fig. 5, and it is said to be noted that it is implicit that the tube guide is mounted to something. The tube guide is said to have a gap (Fig. 5) in which the plastic 13 is fed between the two rollers forming the guide 14, with the space between the rollers constituting a gap through which plastic tubing is directed onto a predetermined point on the main tube shaft, the gap having an oblique angle with respect to the main tube shaft so that the plastic tubing may be wound onto the tube shaft in helical form, citing Fig. 5 in which the plastic 13 is guided onto a specific point on the mandrel 10 where the guide 14 and the gap between the rollers of the guide 14 are at an oblique angle with respect to the mandrel 10 and guide the plastic 13 at an angle onto the mandrel 10 in a helical form. Heimberger is also said to disclose a heat source 22 and 23 downstream from the first point and adapted to heat coiled plastic tubing, and that the heated thermoplastic retains its coiled shape when cooled (col.1 11.53-62).

The Examiner then admits that Heimberger fails to specifically disclose a plastic tube used in the apparatus, but states that the plastic tube is not part of the apparatus but merely a material intended to be used in or worked on by the apparatus. It is thus stated that, since nothing precludes a tube rather than a filament from being fed into the apparatus of Heimberger, the fact that a tube rather than a filament is instantly claimed is said to create no patentable distinction.

Admitting that Heimberger fails to specifically disclose cooling apparatus, it is said to be conventional to use cooling apparatus such as blowers to cool plastic coils formed for use as slide fasteners after the coils are heated in a coil-forming process, citing Heimberger 2 (col.2 11.33-36). This apparatus is said to set the shape of the coil.

After also admitting that Heimberger fails to disclose a cutter, it is said to be conventional to cut slide fasteners to preselected lengths with a cutter directly after heating and cooling, citing Blecher *et al.* (col.4 11.41-47). Further, Dijkman, Sr. *et al.* is said to disclose apparatus for producing plastic coils on a mandrel in which a cutter is used to cut the plastic coil against the mandrel after cooling without interrupting cooling formation. To create a consistent product it is stated that cutting of the mandrel must intrinsically be at preselected time intervals, and it is thus said to be obvious to use a cutter on the mandrel designed to cut a coil against the mandrel, such as that of Dijkman, Sr. *et al.*, to obtain preselected lengths of coils for the apparatus of Heimberger. The rationale for doing so would be motivation provided by Dijkman, Sr. *et al.* that a cutter located on the mandrel would have predictably assured technically simple cutting of the coil at respective locations to produce the final product. Finally, Heimberger 2 is said to teach cooling coils with a blower; Dijkman, Sr. *et al.* is said to teach a blade for cutting against a tube shaft; and Heimberger is said to teach plastic guided onto a turning mandrel to form a helix as the mandrel turns. The Examiner thus concludes that any mandrel performing helical winding has sufficient frictional force to assist in doing such, and therefore since the plastic in Heimberger is wound onto the mandrel or main tube shaft at a predetermined point, it is said to be inherent that the main tube shaft therein has sufficient frictional force to assist with winding the plastic into a helix. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

It is initially noted that claims 13, 14, 17, and 18 were not rejected over this combination of references. It is further noted that claim 5 now includes many of the limitations

with respect to the presence of a carousel as previously set forth in claim 13; that new claim 19 includes, in addition to most of the limitations of claim 5, the limitations from claim 17; and that new claim 21 also includes many of the limitations from prior claim 13 with respect to the presence of a carousel. It is thus submitted that on these bases alone all of the claims in this application clearly and patentably distinguish over this combination of references.

Apart from the above, however, it is also apparent, irrespective of the admitted allowable nature of these claims, that the Heimberger reference does not obviate the specific nature of the tube guide included in these claims. The Heimberger patent relates to the production of continuous helicoidal coupling elements for slide fasteners, which are produced from filaments or solid synthetic resin components, as opposed to the coiled plastic tubing of the present invention. This is a difference with more than a small significance. The overall ability to handle, heat, cool, and manipulate tubing is entirely different from the ability to do so with solid filaments, such as those of Heimberger. As can thus be seen in Fig. 6 of Heimberger, compression rollers 19 and 20 compress turns of the helical product in order to buckle the filaments into the desired shape. No such operation, of course, could be carried out with the coiled tubing of the present invention without crushing that product and rendering it useless for its intended purpose. Furthermore, Heimberger's simple rollers 14, for feeding the filaments onto the mandrel 10, do not constitute a tube guide having a gap through which the tubing is directed onto a predetermined point on the main tube shaft, which gap has an oblique angle with respect to the tube shaft in order to helically form the tubing thereon. Indeed, in the helically wound tubing of the present invention it can be wound continuously, and in fact in continuous surface contact, as is referred to in ¶ [0035] of the present application in which the

adjacent turns are actually adhered to each other. The spaced filament coils of Heimberger are quite different therefrom. Of course, winding a filament around a mandrel is far easier than is that very same operation with a plastic tubing segment. There is thus no need to add considerable amounts of heat, for example, in the environment of Heimberger. For all of these reasons, it is believed that the environment of Heimberger does not suggest using even the elements of that invention in the present environment, but that, in any event, there is no disclosure whatsoever in Heimberger of the required tube guides of the present invention.

Once again, however, in view of the prior indication that these claims include allowable subject matter, further detailed analysis of this combination of references is not deemed to be necessary or appropriate at this time.

Claims 6 and 7 have been rejected as being unpatentable over Heimberger, Heimberger 2, Blecher *et al.*, and Dijkman, Sr. *et al.*, and further in view of Moncrieff under 35 U.S.C. § 103(a). As for claim 6, after admitting that each of these references does not disclose a tube shaft tapering to a small diameter, Moncrieff is relied upon as disclosing a tube shaft in a coiling apparatus having a smaller diameter further down the shaft. Moncrieff is said to teach that such a decrease in diameter assists in discharging the coil, and although it is shown as an instant drop-off rather than a taper, it is said to be obvious to do so. As for claim 7, the rotation speed is said to be conventional, citing Moncrieff therefor. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

Applicant initially reiterates all of his above-noted contentions with respect to the patentable nature of claim 5, from which claims 6 and 7 depend. On that basis alone, it is clear that these claims are now in patentable condition. As for Moncrieff, it is again noted, like Heimberger, that Moncrieff is not even directed to a coiling system for forming coiled plastic

tubing. Moncrieff is directed to flexible thermoplastic rods, which are clearly not hollow tubes, such as hoses or the like. These are solid rods of plastic material, and in that respect correspond to the filaments in Heimberger. Applicant would thus repeat all of his above contentions with respect to the distinctions over Heimberger in this case. These clearly apply with at least equal force to the disclosure in Moncrieff. Beyond that, it is also noted that the overall disclosure of Moncrieff shows a mandrel 10 including a cylindrical part 12 terminating in cylindrical extension 13 having a similar diameter to that of cylindrical part 12. Hollow shaft 16, including fixed tube 17 on the inside thereof, surrounds extension 13 and cylindrical part 12. Both the shaft 16 and the tube 17 are driven at the same speed as mandrel 10 by means of belts 19, and reciprocating movement is created by cam 21. All of this gradually urges the helix 36 through the tube. As recognized by the Examiner, the only discussion of creating the helix begins at column 3, line 8 with a statement to the effect that a few turns of the rod are wound by hand on the mandrel so that the free end of the rod is within the tube 17, and the end leading to the supply of rod leaves the tapered part of the mandrel at part 38.

The mechanism disclosed in Moncrieff specifically requires use of a tube 17 moving with and surrounding the part 12 by essentially the size of the rods therebetween. Furthermore, a complex mechanism, including fingers 31, is used to move the coils of the rod through this device. There is no disclosure whatsoever in Moncrieff of the essential tube guide of the present invention, mounted with respect to a first point on the main tube shaft, and having the required gap through which the plastic tubing is directed onto the main tube shaft, the gap making an oblique angle with respect to the main tube shaft so that the plastic tubing may be wound onto the main shaft in a helical form. This specified mechanism is precisely why it is now possible to correctly and automatically apply the plastic tubing onto the main tube shaft without the need to hand

apply the tubing thereto, as in Moncrieff. The Examiner apparently believes, however, that no disclosure whatsoever of such apparatus is necessary, and that it is just "obvious" on its face. The Examiner's contention that it is implicit in Moncrieff that somehow the plastic is disposed on the mandrel is simply no excuse for the utter lack of teachings in the art. In any event, however, the claims not only require a specific tube guide mounted with respect to a first point on the main tube shaft, but also require the specific tube guide shown in the present specification, including a gap 44 providing an opening at an oblique angle relative to the plane of the tube guide 40. This angle provides for formation of the coils in a helical form, and in a manner which will not damage or collapse the plastic tubing of the present invention. This claimed mechanism is not only completely absent in the prior art, but development of this technique took considerable effort in order to provide a precise mechanism for permitting automatic helical winding of tubular products without the need for human intervention, such as the hand feeding of Moncrieff, and without damaging or collapsing the plastic tubing itself. All of this belies the Examiner's assertion, utterly without support, of obviousness. It has thus been found that use of the only technique which is disclosed in Moncrieff (namely, one in which a few turns of the rod are wound by hand onto the mandrel) is simply ineffective, not only in producing the helical winding of the present invention, but to do so in connection with plastic tubing without damaging or collapsing the plastic tubing itself.

As for the requirement for a cutter at a fourth point on the main tube shaft, once again the utter lack of any such apparatus in Moncrieff is dismissed as purely "obvious." However, since even in Moncrieff, the coiled rod only interacts with the face of the mandrel in connection with cylindrical part 12, which is surrounded by rotating shaft 16 and tube 17,

there is no way in which any apparatus such as a cutter could be incorporated into Moncrieff at this location in connection with the main tube shaft itself. Furthermore, the attempt to overcome this deficiency by incorporating Dijkman, Sr. et al. therein is not considered to be appropriate or effective. Dijkman, Sr. et al. relates to curved plastic pieces, such as underwires for brassieres. Again, like Moncrieff and Heimberger, it does not even relate to the plastic tubing of the present invention. Furthermore, in this apparatus the extruded wire itself is applied to coil form 8 which includes press rollers 11 on the circumference thereof for holding the plastic wire between the outer mantle surface and the mantle surface 9. The apparatus shown in Dijkman, Sr. et al. is nothing like either the presently claimed invention, or even Moncrieff itself. In any event, the Examiner relies upon this disclosure solely for the discussion beginning at column 4, line 47 thereof, to the effect that when the coil 15 achieves a certain length on roller 14, the plastic wire is cut in the area of the coil form 8 to remove it from the roller. No additional mechanism or discussion of same is included in this reference. It is therefore apparent that this combination of references does not teach or suggest the specific limitations of claim 5, and that, in any event, these references could not be readily combined since it is not clear how one would incorporate the apparatus of Dijkman, Sr. et al. into the Moncrieff device in the first instance. Doing so would, in fact, appear to require an entire new design to be developed therefor.

With respect to claim 6, Moncrieff does not disclose the required main tube shaft which tapers from one diameter to a smaller diameter along a portion of its length. There is no taper in Moncrieff, but merely a transition from the cylindrical part 12 to the cylindrical extension 13 so that the helically wound rod can fall from its support on part 12.

It is therefore respectfully submitted that these claims are clearly patentable over the art, and reconsideration and allowance of these claims is also respectfully solicited.

Claim 8 has been rejected as being unpatentable over Heimberger, Heimberger 2, Bleher *et al.*, and Dijkman, Sr. *et al.*, and further in view of Eckles *et al.* under 35 U.S.C. § 103(a). After admitting that the primary references fail to disclose a heat gun, the Examiner contends that heating and coiling the coil would generally have the same effect on the final product regardless of the means to do so. It is thus said to be conventional to use a heat gun to soften plastic, citing Eckles *et al.* at column 3, lines 32-35. It is thus said to be obvious to use a heat gun as the heater in the modified Heimberger apparatus. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

Applicant reiterates all of his above-noted contentions with respect to the clear deficiencies of each of the principal references, and primarily Heimberger, with respect to the limitations of these claims, including claim 8. Once again, the clear patentable nature of claim 5 makes it apparent that claim 8 is also patentable, and reconsideration and withdrawal of this rejection is also respectfully requested.

In any event, applicant does not claim to have invented the heat gun, and further detailed discussion of Eckles is not believed to be necessary or appropriate at this time.

Claim 9 has been rejected as being unpatentable over Heimberger, Heimberger 2, Bleher *et al.*, and Dijkman, Sr. *et al.*, in view of Howard under 35 U.S.C. § 103(a). After admitting that the primary references fail to disclose a temperature range of 400°F to 700°F, the Examiner contends that the temperature used for heating is generally not critical, and any temperature capable of softening the plastic would be adequate. Once again, however, in view of applicant's above-noted comments, the clear patentable nature of claim 5,

from which claim 9 depends, and the fact that Howard is applied only for the specific temperature range in question, it is believed to be clear that claim 9 is also patentable, and further detailed discussion of the Howard reference is not deemed necessary or appropriate at this time.

Claim 11 has been rejected as being unpatentable over Heimberger, Heimberger 2, Bleher *et al.*, and Dijkman, Sr., *et al.*, and further in view of Schelp *et al.* under 35 U.S.C. § 103(a). After admitting that the primary references fail to disclose a vortex cooling tube, the Examiner contends that heating and cooling the coil would have the same effect on final product regardless of the means used to do so, and that a vortex cooling tube is a conventional means for cooling. However, once again, in view of the fact that claim 11 also depends from claim 5, and that applicant does not contend that he has invented vortex cooling tubes, it is believed that claim 11 is clearly patentable in nature, and that further discussion of same is unnecessary at this time.

Claim 16 has been rejected as being unpatentable over Heimberger, Heimberger 2, Bleher *et al.*, and Dijkman, Sr. *et al.* in view of Mellor and Huvey under 35 U.S.C. § 103(a). After admitting that the primary references do not disclose a mandrel having a UHMW polyethylene surface, it is said to be conventional to fabricate the mandrel or at least its surface in a coiling apparatus from a nonstick surface, citing Huvey. Furthermore, Mellor is said to teach that UHMW polyethylene has a low coefficient of friction, excellent dimensional stability and a good wear rate thus rendering it obvious to use same. Once again, however, it is noted that claim 16 also depends from claim 5, whose clearly patentable nature has already been emphasized. It is thus believed that further detailed discussion of either Mellor or Huvey is unnecessary at this time, and reconsideration and allowance of these claims is also respectfully requested.

It is again noted that the Examiner has indicated that claims 13, 14, 17 and 18 would be allowable if written in independent form. In any event, in view of the nature of the

amendments in this case, it is respectfully submitted that all of the claims in this application now possess the requisite novelty, utility and unobviousness to warrant their immediate allowance, which action is therefore respectfully solicited. If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any further objections to allowance of these claims.

Finally, if there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,
Electronic signature: /Arnold H.
Krumholz/
Registration No.: 25,428
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK, LLP
600 South Avenue West
Westfield, New Jersey 07090
(908) 654-5000
Attorney for Applicant

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